UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,648	02/10/2004	Huzeir Lekovic	DWNS.62631	2005

7590 06/30/2010

Richard W. Hoffmann
PO Box 70098
Rochester Hills, MI 48307

EXAMINER	
COONEY, JOHN M	
ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
06/30/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HUZEIR LEKOVIC, RIFAT TABAKOVIC,
ALI J. EL-KHATIB, and FRANK V. BILLOTTO

Appeal 2009-010042
Application 10/776,648
Technology Center 1700

Decided: June 29, 2010

Before MICHAEL P. COLAIANNI, BEVERLY A. FRANKLIN, and LINDA M. GAUDETTE, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's refusal to allow claims 1 through 25 and 48 through 54, which are all of the claims pending in the above-identified application. We have jurisdiction pursuant to 35 U.S.C. § 6.

We AFFIRM.

STATEMENT OF THE CASE

The subject matter on appeal is directed to, *inter alia*, a method of forming a rigid polyurethane foam. Claim 1 is illustrative.

1. A method comprising mixing a polyisocyanate component with a polyol component in the presence of at least one catalyst for the reaction of a polyol or water with a polyisocyanate and subjecting the mixture to conditions sufficient to cure to form a rigid polyurethane foam wherein (a) the polyisocyanate component contains an isocyanate-terminated prepolymer made by reacting an excess of an organic polyisocyanate with (i) at least one polyol and (ii) at least one hydroxyl-functional acrylate, (b) the polyol component comprises an effective amount of a blowing agent and isocyanate-reactive materials comprising a hydrophobic polyol biopolymer comprising an ester of a fatty acid and glycerol, the polyol component further comprising a second polyol being a non-biopolymer and wherein the biopolymer is present in up to 40 wt% of the total polyol component, and the biopolymer being present in an amount less than the second polyol; (c) the ratio of isocyanate groups in the polyisocyanate component to the number of isocyanate-reactive groups in the polyol component is less than 1:1; and (d) the polyisocyanate component has a functionality of between about 2.0 and about 4.0.

The Examiner maintains[1] the following rejections:

1) Claims 1-9, 19-25, and 48-54 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement;

[1] As is apparent from pages 2 and 3 of the Answer, the Examiner withdraws the following rejections set forth in the Final Office Action (mailed on November 1, 2007): (1) the § 112, first paragraph rejections corresponding to Rejections VII.A. and VII.B. at page 8 of the Appeal Brief; (2) the § 112, first paragraph rejection, which corresponds to Rejection VII.C. at page 8 of the Appeal Brief, of claims 10 through 18; and (3) the § 112, second paragraph rejection corresponding to Rejection VII.D. at page 9 of the Appeal Brief.

2) Claims 1-25 and 48-54 under 35 U.S.C. § 103(a) as unpatentable over Tsai (US 4,673,696, published Jun. 16, 1987) and Kurth (US 2002/0121328 A1, published Sep. 5, 2002)[2];

3) Claims 1-25 and 48-54 under 35 U.S.C. § 103(a) as unpatentable over Lekovic '390 (US 6,803,390 B2, issued Oct. 12, 2004) and Lekovic '916 (US 6,699,916 B2, issued Mar. 2, 2004), each taken alone, in view of Kurth;

4) Claims 1-25 and 48-54 under nonstatutory obviousness-type double patenting as unpatentable over claims 1-22 of Lekovic '390 and claims 1-19 of Lekovic '916, each taken alone, in view of Kurth.

REJECTION (1)

ISSUE

Did the Examiner err in finding that the later claimed negative limitation of claims 1 and 19 requiring that the second polyol be a non-biopolymer introduces a new concept not provided in the originally filed written description in violation of the first paragraph of 35 U.S.C. § 112? We decide this issue in the negative.

PRINCIPLES OF LAW

As stated in *Ariad Pharms., Inc. v. Eli Lilly and Co.*,

> [t]he test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in

---

[2] The additional rejection of all the appealed claims in rejection (2) amounts to a rejection that is cumulative to rejection (3) since the rejection is based on similar claim construction and the cited prior art applied in each of the Examiner's rejections disclose substantially the same information. (*See* Ans. 4-8). Because rejection (2) is merely cumulative to rejection (1), we vacate rejection (2).

> the art that the inventor had possession of the claimed subject matter as of the filing date. . . .
>
> The term "possession," however, has never been very enlightening. It implies that as long as one can produce records documenting a written description of a claimed invention, one can show possession. But the hallmark of written description is disclosure. Thus, "possession as shown in the disclosure" is a more complete formulation. Yet whatever the specific articulation, the test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed.

598 F. 3d 1336, 1351 (Fed. Cir. 2010) (*en banc*).

With respect to whether a negative claim limitation complies with the written description requirement, the critical question is whether the negative claim limitation introduces a new concept. *Ex parte Grasselli*, 231 USPQ 393, 394 (Bd. App. 1983) (holding that the negative claim limitation "said catalyst being free of uranium and the combination of vanadium and phosphorous" in a process claim introduced new concepts because, *inter alia*, "the express exclusion of certain elements implies the permissible inclusion of all other elements not so expressly excluded"), aff'd mem., 738 F.2d 453 (Fed. Cir. 1984).

FACTUAL FINDINGS, ANALYSIS, AND CONCLUSION

We adopt the Examiner's findings in the Answer and Final Office Action as our own, except for those findings that we expressly overturn or set aside in the Analysis that follows. Additional findings may be included in this section.

Appellants argue[3] that "the added 'non-biopolymer' claim limitation of independent claims 1 and 19 . . . is supported by the originally filed application such that it satisfies the written description requirement." (App. Br. 13). In that regard, Appellants argue that "non-biopolymer" modifies "second polyol" in the claim such that one of ordinary skill in the art would understand that the "second polyol" is limited to conventional polyols (App. Br. 13-14). In addition, Appellants argue that the term "non-biopolymers" is limited to "man-made polymers that are not biopolymers" because polyol compounds such as SPECFLEX NC 700 and VORANOL 391 described in the Specification are man-made. (Reply Br. 2-3).

Contrary to Appellants' arguments, Appellants' disclosure does not fully support the concept that the second polyol is a non-biopolymer as required by claims 1 and 19. In this regard, the disputed claim term is a new concept because it *includes* every polyol that is a non-biopolymer and *excludes* every polyol that is a biopolymer.

For example, while the Specification discloses (Spec. ¶¶ [0019]-[0023] and [0061]) that an additional polyol (e.g., a second polyol) may include polyol compounds such as alkylene glycols and glycol ethers (which Appellants state are representative of conventional polyols) or SPECFLEX

---

[3] We note that Appellants at pages 2 and 3 of the Reply Brief rely upon newly submitted evidence (i.e., Webster's Nine New Collegiate Dictionary and Grant & Hackh's Chemical Dictionary) to support their arguments regarding rejection (1). Since this is new evidence and was not entered into the record, we shall not consider it. *See* 37 C.F.R. 41.33(d)(2)(stating "[a]ll other affidavits or other evidence filed after the date of filing an appeal pursuant to § 41.31(a)(1) through (a)(3) will not be admitted except as permitted by §§ 41.39(b)(1), 41.50(a)(2)(i) and 41.50(b)(1)") and 37 C.F.R. 41.41(a)(2)(stating "[a] reply brief shall not include . . . any new or non-admitted affidavit or other evidence.").

NC 700 and VORANOL 391 (which Appellants state are representative of man-made polyols), the Specification does not *limit* this additional polyol (e.g., a second polyol) to be man-made polyols or conventional polyols such that the Specification *excludes* every polyol that is a biopolymer. Nor is Appellants' disclosure sufficient to *include* every polyol that is a non-biopolymer.

As another example, while paragraph [0031] of the Specification discloses that "[t]he polyol component will most typically include . . . two or more different polyols," this disclosure merely refers to embodiments where the polyols are different. In reference to our above discussion, this portion of the Specification, however, does not disclose that polyols that are biopolymers are *excluded* from being one of these different polyols (e.g., second polyol) or that one of these different polyols *includes* every polyol that is a non-biopolymer.

Indeed, as correctly stated by the Examiner "[d]espite [A]ppellants' assertions to the contrary, the originally filed supporting disclosure does not support [A]ppellants' attempt to limit their 'second polyol' to all other second polyols that are 'non-biopolymer.'" (Ans. 11).

Thus, we find that the Examiner did not err in finding that the later claimed negative limitation of claims 1 and 19 requiring that the second polyol be a non-biopolymer introduces a new concept not provided in the originally filed written description in violation of the first paragraph of 35 U.S.C. § 112.

Accordingly, we sustain the Examiner's decision to reject claims 1-9, 19-25, and 48-54 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

REJECTION (3)

Appellants' arguments focus on independent claims 1, 10, and 19. (App. Br. 22-24 and Reply Br. 1-3). Accordingly, the non-argued claims under this rejection stand or fall with claims 1, 10, and 19. *See* 37 C.F.R. § 41.37(c)(1)(vii).

ISSUE

Did the Examiner err in determining that the combined teachings of the cited prior art references would have rendered obvious the claimed inventions comprising, *inter alia*, a hydrophobic biopolymer present in an amount required by claims 1, 10, and 19 within the meaning of § 103? We decide this issue in the negative.

FINDINGS OF FACT (FF)

We adopt the Examiner's findings in the Answer and Final Office Action as our own, except for those findings that we expressly overturn or set aside in the Analysis that follows. We add the following factual findings:

1. The Specification discloses that "the biopolymer is preferably hydrophobic. Examples of preferred biopolymers include, without limitation, castor oil, soybean oil, and the like, including combinations thereof." (Spec ¶ [0019]). The Specification also discloses that "[a]dditional polyol(s) useful in the present invention . . . [may include] compounds such as . . . tertiary amine-containing polyols." (Spec. ¶¶ [0020] and [0021]).

2. Appellants do not specifically dispute the Examiner's finding that "[o]ils by their nature are hydrophobic/water repelling." (*Compare* Ans. 16 *with* App. Br. 17-24 and Reply Br. 1-3).

3. Leckovic '916 teaches at col. 1, l. 40 to col. 2, l. 23 forming a rigid hybrid polyurethane foam via reacting an isocyanate component and a polyol component and Lekovic '916 teaches at col. 1, l. 40 to col. 2, l. 35 forming a rigid polyurethane foam by reacting an isocyanate component with a polyol component. Lekovic '916 teaches at column 7, line 26 that "[t]he polyol component includes one or more polyol" and Lekovic '390 teaches at column 6, lines 15-16 that "[t]he polyol component includes . . . a polyol or mixture of polyols." In addition, Lekovic '916 and Lekovic '390 teach that "the tertiary amine-containing polyol may constitute from about 1 to about 80% by weight" of all polyols. (Lekovic '916, col. 8, ll. 66-67 and Lekovic '390, col. 6, ll. 65-67).

Additional findings of fact may appear in the Analysis that follows.

PRINCIPLE OF LAW

A slight overlap between the prior art and claimed ranges establishes a prima facie case of obviousness. *In re Peterson*, 315 F.3d 1325, 1329-30 (Fed. Cir. 2003) (stating that "[t]he normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages.").

ANALYSIS AND CONCLUSION

Appellants argue that "no reason has been provided that supports combining the teachings of either Lekovic reference with Kurth, as proposed, to render independent claims 1, 10, and 19 and their dependent claims obvious. . . . only a factually empty and unsupported conclusory statement has been advanced to in an attempt to justify this combination." (App. Br. 22). In addition, Appellants argue that the Examiner failed to identify exactly where the Lekovic patents or Kurth taught or would have suggested a polyol component comprising a hydrophobic biopolymer in the amount required by claims 1, 10, and 19. (App. Br. 23).

In that regard, Appellants argue that

> Kurth [at ¶ [0027]] teaches to add -OH groups (adding hydroxyl groups increases functionality) to a vegetable oil through this two-stage process which, in turn, renders the man-modified vegetable oil more functional and also more hydrophilic (-OH groups are very polar and therefore water attractive). As a result, Kurth fails to teach or suggest the "hydrophobic biopolymer" claim limitation.

(App. Br. 20).

In addition, Appellants argue that

> Kurth [would not have suggested] a hydrophobic polyol biopolymer that "is present in up to 40wt% of the total polyol component" and also "present in an amount less than the second polyol" as called for in independent claims 1, 10, and 19 . . . [E]ach of the examples disclosed in Kurth call for the transesterified polyol - which, again, the Appellants dispute is even a hydrophobic polyol biopolymer - to be present in a greater weight percent than all other polyols.

(App. Br. 21). Appellants also argue that "[Kurth's] not-yet-modified starting material can not [sic] meet the [disputed claim] limitation." (App. Br. 21).

With respect to Appellants' argument that the Examiner has provided no reason to combine Lekovic and Kurth other than a factually empty and unsupported conclusory statement, Lekovic '916 and Lekovic '390 individually teach a polyurethane foam formed from, *inter alia*, a polyol component. (FF 3).

In addition, Lekovic '916 and Lekovic '390 individually teach a blend of polyols, which comprises a tertiary amine-containing polyol [a non-biopolymer] and another polyol, where the tertiary amine-containing polyol [non-biopolymer] may constitute from about 1 to about 80% by weight" of all polyols, which correspondingly means that the another polyol may constitute from about 20% to about 99% by weight of all polyols. (FF 3).

While neither of the Lekovic references explicitly teaches the use of a hydrophobic polyol, Appellants do not specifically dispute the Examiner's finding that "Kurth et al. disclose the usefulness of polyols of such natural oils as soybean oils [corresponding to the claimed hydrophobic polyol biopolymer] in the preparation of polyurethane foams for the purpose of deriving polyurethane products from renewable resources." (*Compare* Ans. 7 *with* App. Br. 17-24 and Reply Br. 1-3; *see also* FF 1).

Thus, contrary to Appellants' argument, we agree with the Examiner's determination that "it would have been obvious for one having ordinary skill in the art to have employed the biobased polyols of Kurth . . . as the hydrophobic polyol in the work-up of the products of the Lekovic . . .

patents for the purpose of employing renewable reactants in deriving useful products." (Ans. 7-8). The Examiner's reason for combining Kurth's hydrophobic polyol with either Lekovic composition is not factually empty as argued. To the contrary, such reasoning comes directly from the teachings of Kurth that using hydrophobic polyols to make polyurethane foam is desirable for environmental reasons.

In addition, with respect to the claimed amounts of polyol components, Appellants do not specifically dispute the Examiner's stated rationale, which is based upon these polyol components being result effective variables. (*Compare* Ans. 17 and 18 *with* App. Br. 17-24 and Reply Br. 1-3). Thus, because Appellants do not specifically dispute the Examiner's stated rationale, Appellants' arguments are unpersuasive of reversible error.

Moreover, we note that this range of biobased polyols (biopolymer), which constitutes from about 20 to about 99 wt% of all polyols, overlaps Appellants' claimed range of "up to 40 wt% of the total polyol component," and thus establishes a prima facie case of obviousness. *See Peterson*, 315 F.3d at 1329-30.

Further, we note that since this amount of biobased polyols (biopolymer) is within the claimed range of "up to 40 wt% of the total polyol component," then the remaining amount (i.e., at least 60 wt%) of the total polyol component is a tertiary amine-containing polyol (second polyol being a non-biopolymer) such that the biopolymer is present in an amount less than the second polyol. Accordingly, Appellants' arguments are unpersuasive of reversible error.

Appellants also argue (App. Br. 20) that "Kurth fails to teach or suggest the 'hydrophobic biopolymer' claim limitation" because "Kurth [at ¶ [0027]] teaches . . . add[ing] -OH groups . . . [which] renders the man-modified vegetable oil more functional and also more hydrophilic." Appellants, however, do not specifically dispute the Examiner's finding that "[o]ils by their nature are hydrophobic/water repelling." (FF 2).

While it is true that Kurth teaches employing the step of propoxylation, butyoxylation, or ethoxylation, Kurth does not explicitly state that any of these steps converts its hydrophobic polyol into a hydrophilic polyol.

Instead, Kurth at paragraph 27 teaches that each of these steps merely increases the functionality of its polyol. Moreover, Appellants direct us to no credible evidence to support their argument that each of these steps converts a hydrophobic polyol into a hydrophilic polyol.

Thus, weighing as a whole Appellants' arguments that employing the step of propoxylation, butyoxylation, or ethoxylation converts a hydrophobic polyol into a hydrophilic polyol, which is not supported by any credible evidence, and the Examiner's undisputed finding that oils by their nature are hydrophobic, we find Appellants' arguments unpersuasive of reversible error.

With respect to Appellants' argument that "[Kurth's] not-yet-modified starting material can not [sic] meet the limitation in the Appellants' claim[ed inventions]," in reference to our above discussion, the Examiner relies upon Kurth's vegetable oil modified via, *inter alia*, propoxylation, butyoxylation, or ethoxylation and not the "not-yet-modified starting material" as argued by

Appellants. Accordingly, Appellants' argument is unpersuasive of reversible error.

Thus, it follows that the Examiner did not err in determining that the combined teachings of the cited prior art references would have rendered obvious the claimed inventions comprising, *inter alia*, a hydrophobic biopolymer present in an amount required by claims 1, 10, and 19 within the meaning of § 103.

Accordingly, we sustain the Examiner's decision to reject claims 1-25 and 48-54 under 35 U.S.C. § 103(a) over Lekovic '390 and Lekovic '916, each taken alone, in view of Kurth.

REJECTION (4)

ISSUE

Did the Examiner reversibly err in determining Appellants' claimed inventions would have been merely obvious variations of the subject matter of claims 1-22 of Lekovic '390 and claims 1-19 of Lekovic '916, each taken alone, in view of Kurth? We decide this issue in the affirmative.

PRINCIPLES OF LAW

The key question in any obviousness double patenting analysis is: "Does any claim in the application define merely an obvious variation of an invention claimed in the patent asserted as supporting double patenting?" *General Foods v. Studiengesellschaft Kohle mbH*, 972 F.2d 1272, 1278 (Fed. Cir. 1992). Answering this question requires that the decision maker first construe the claims in the patent and the claims under review and

determine the differences between them. *Eli Lilly v. Barr Labs.*, 251 F.3d 955, 970 (Fed.Cir.2001). After determining the differences, the decision maker must determine whether the differences in subject matter render the claims patentably distinct. *Id.*

FACTUAL FINDINGS, ANALYSIS, AND CONCLUSION

The Examiner states that it would have been obvious to have "employed the biobased polyols of Kurth et al. as the hydrophobic polyol [of either Lekovic reference] in the work-up of the products of claims of the Lekovic." (Ans. 9).

The Examiner, however, does not direct us to any specific claim language in either Lekovic '390 or Lekovic '916 disclosing a hydrophobic polyol. Nor does the Examiner provide any credible reason to support the determination that Appellants' claimed invention would have been an obvious variation of claims 1-22 of Lekovic '390 and claims 1-19 of Lekovic '916, each taken alone, in view of Kurth.

Accordingly, we reverse the Examiner's decision to reject claims 1-25 and 48-54 under nonstatutory obviousness-type double patenting as unpatentable over claims 1-22 of Lekovic '390 and claims 1-19 of Lekovic '916, each taken alone, in view of Kurth.

ORDER

For the above reasons, rejections (1) and (3) are sustained; rejection (4) is reversed; and cumulative rejection (2) is vacated.

TIME PERIOD

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(2009).

AFFIRMED

cam

RICHARD W. HOFFMANN
P O BOX 70098
ROCHESTER HILLS, MI 48307